Shri Vile Parle Kelavani Mandal's
DWARKADAS J. SANGHVI COLLEGE OF ENGINEERING
(Autonomous College Affiliated to the University of Mumbai)
NAAC Accredited with "A" Grade (CGPA : 3.18)

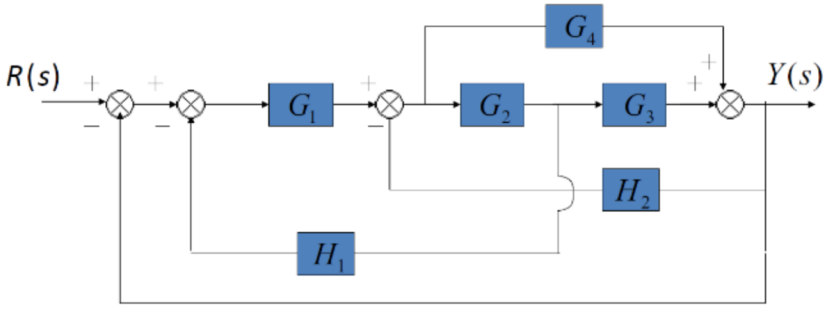
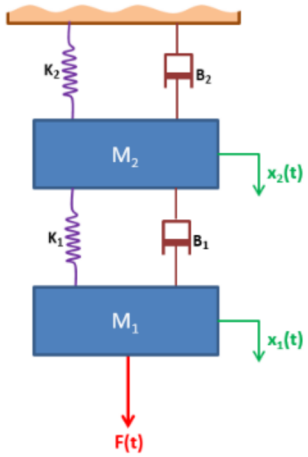
End Semester Examination
A.Y.: 2022-2023

Max. Marks: 75	**Duration:** 3 hrs.
Class: B.Tech.	Semester: VII
Course: Automation and Control Engineering	Course Code: DJ19PEC801
Program: Production Engineering:	

Instructions:

(1) This question paper contains two pages.
(2) All Questions are Compulsory.
(3) All questions carry equal marks.
(4) Answer to each new question is to be started on a fresh page.
(5) Figures in the brackets on the right indicate full marks.
(6) Assume suitable data wherever required, but justify it.
(7) Draw the neat labelled diagram-s, wherever necessary.

Q. No.		Max. Marks
Q.1 a)	Explain in brief the Types and Levels of Automation. **OR** Explain any three types of cylinders used in hydraulics with neat sketch.	07
Q.1 b)	Explain the following circuits with neat sketch. i) Regenerative circuit ii) Counterbalance valve circuit	08
Q.2 a)	Discuss various benefits and impact of Automation in Manufacturing. **OR** Draw ISO symbol for i) Telescopic Cylinder ii) Temperature Compensated Flow Control Valve iii) 4/3 Directional Control Valve iv) Pilot Operated Pressure Relief Valve v) Hydraulic Pump with two directional flow vi) Throttle and check valve in one construction vii) Pressure Switch	07
Q.2 b)	Explain in brief with neat sketch (Any Two) i) Pressure relief valve ii) Pressure reducing valve iii) Unloading Valve iv) counterbalance valve	08
Q.3 a)	Design a pneumatic circuit for the following sequence using cascade method A+B+/B-A- where A and B stands for cylinders + indicate extension and – indicate retraction of cylinders.	08
Q.3 b)	Define Control system. Explain open loop and closed loop control system with examples.	07

	OR Find the transfer function of the following block diagram.  	
Q.4 a)	Explain the various rules for the block diagram reduction.	08
Q.4 b)	Define transfer function. Obtain the transfer function (x_2/x_1 and x_2/F) of mechanical system as shown in figure below.  **OR** Design an Electo-pneumatic circuit for the following sequence A+B+/B-A-, A and B stands for cylinders + indicate extension and – indicate retraction of cylinders.	07
Q.5 a)	Write a short note on the following (Any Three) i) Position and Proximity Sensors ii) Velocity and Motion Sensors iii) Force and Fluid Pressure Sensors iv) Temperature and light Sensors	15